



United States Environmental Protection Agency
Washington, D.C. 20460

Water Compliance Inspection Report

Section A: National Data System Coding (i.e. PCS)

Transaction Code NPDES yr/mo/day Inspection Type Inspector Fac Type
1 N 2 3 DC0000019 11 12 13/07/31 17 18 C 19 S 20 4
Remarks
21 66
Inspection Work Days Facility Self-Monitoring Evaluation Rating B1 QA -----Reserved-----
67 69 70 4 71 N 72 N 73 74 75 80

Section B: Facility Data

Name and Location of Facility Inspected (For industrial users discharging to POTW, also include POTW name and NPDES permit number)

Department of the Army
Baltimore District, Corps of Engineers
Washington Aqueduct Division
5900 MacArthur Boulevard, NW
Washington, DC 20016-2514

Entry Time/Date

9:00 AM 7/31/2013

Permit Effective Date

11/20/2008

Exit Time/Date

5:00 PM 7/31/2013

Permit Expiration Date

11/20/2013

Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Number(s)

1. John Peterson, Superintendent, (202) 764-0009
2. Arthur White, Water Treatment Plant Supervisor; (202) 764-0018
3. Tenkasi Viswanathan, Laboratory Quality Assurance Officer, (202) 764-0732

Other Facility Data (e.g., ISC NAICS, and other descriptive information)

Name, Address of Responsible Official/Title/Phone and Fax Number

Thomas P. Jacobus, General Manager
Baltimore District, Corps of Engineers
Washington Aqueduct Division
5900 MacArthur Boulevard, NW
Washington, DC 20016-2514 Tel. (202) 764-0031; Fax (202) 764-2401

Contacted

☒ Yes ☐ No

Section C: Areas Evaluated During Inspection (Check only those areas evaluated)

<input checked="" type="checkbox"/> Permit	<input checked="" type="checkbox"/> Self-Monitoring Program	<input type="checkbox"/> Pretreatment	<input type="checkbox"/> MS4
<input checked="" type="checkbox"/> Records/Reports	<input checked="" type="checkbox"/> Compliance Schedules	<input checked="" type="checkbox"/> Pollution Prevention	
<input checked="" type="checkbox"/> Facility Site Review	<input checked="" type="checkbox"/> Laboratory	<input type="checkbox"/> Storm Water	
<input checked="" type="checkbox"/> Effluent/Receiving Waters	<input checked="" type="checkbox"/> Operations & Maintenance	<input type="checkbox"/> Combined Sewer Overflow	
<input type="checkbox"/> Flow Measurement	<input checked="" type="checkbox"/> Sludge Handling/Disposal	<input type="checkbox"/> Sanitary Sewer Overflow	

Section D: Summary of Findings/Comments

(Attach additional sheets of narrative and checklists, including Single Event Violation codes, as necessary)

SEV Codes

SEV Description

None

Name(s) and Signature(s) of Inspector(s)

Adion Chinkuyu

Agency/Office/Phone and Fax Numbers

DDOE; Tel.: (202) 535-2193; Fax: (202) 535-1363

Date

7/31/13

Isaac Kelley

DDOE; Tel.: (202) 535-2691; Fax: (202) 535-1363

7/31/13

David Pilat

DDOE; Tel.: (202) 281-3963; Fax: (202) 535-1363

7/31/13

Signature of Management Q A Reviewer

Agency/Office/Phone and Fax Numbers

Date

Comments

See attachments.

		PERMIT NO. DC0000019
SECTIONS F THRU L: COMPLETE ON ALL INSPECTIONS, AS APPROPRIATE. N/A = NOT APPLICABLE		
SECTION F - FACILITY AND PERMIT BACKGROUND		
ADDRESS OF PERMITTEE IF DIFFERENT FROM FACILITY (Including City, County and ZIP code) Same	DATE OF LAST PREVIOUS INVESTIGATION BY EPA/STATE 05/30/2012	
	FINDINGS None.	
SECTION G - RECORDS AND REPORTS		
RECORDS AND REPORTS MAINTAINED AS REQUIRED BY PERMIT. DETAILS:		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(a) ADEQUATE RECORDS MAINTAINED OF:		
(i) SAMPLING DATE, TIME, EXACT LOCATION		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(ii) ANALYSES DATES, TIMES		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(iii) INDIVIDUAL PERFORMING ANALYSIS		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(iv) ANALYTICAL METHODS/TECHNIQUES USED		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(v) ANALYTICAL RESULTS (e.g., consistent with self-monitoring report data)		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(b) MONITORING RECORDS (e.g., flow, pH, D.O., etc.) MAINTAINED FOR A MINIMUM OF THREE YEARS INCLUDING ALL ORIGINAL STRIP CHART RECORDINGS (e.g., continuous monitoring instrumentation, calibration and maintenance records).		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(c) LAB EQUIPMENT CALIBRATION AND MAINTENANCE RECORDS KEPT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(d) FACILITY OPERATING RECORDS KEPT INCLUDING LOGS FOR EACH TREATMENT UNIT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(e) QUALITY ASSURANCE RECORDS KEPT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(f) RECORDS MAINTAINED OF MAJOR CONTRIBUTING INDUSTRIES (and their compliance status) USING PUBLICLY OWNED TREATMENT WORKS.		<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
SECTION H - PERMIT VERIFICATION		
INSPECTION OBSERVATIONS VERIFY THE PERMIT. DETAILS:		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A (Further explanation attached <u>See Notes</u>)
(a) CORRECT NAME AND MAILING ADDRESS OF PERMITTEE.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(b) FACILITY IS AS DESCRIBED IN PERMIT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(c) PRINCIPAL PRODUCT(S) AND PRODUCTION RATES CONFORM WITH THOSE SET FORTH IN PERMIT APPLICATION.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(d) TREATMENT PROCESSES ARE AS DESCRIBED IN PERMIT APPLICATION. (See comments)		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(e) NOTIFICATION GIVEN TO EPA/STATE OF NEW, DIFFERENT OR INCREASED DISCHARGES		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(f) ACCURATE RECORDS OF RAW WATER VOLUME MAINTAINED.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(g) NUMBER AND LOCATION OF DISCHARGE POINTS ARE AS DESCRIBED IN PERMIT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(h) CORRECT NAME AND LOCATION OF RECEIVING WATERS.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(i) ALL DISCHARGES ARE PERMITTED.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
Comments: Only Outfall 002Q discharges to Potomac River. Other outfalls stopped discharging because the facility started treating the residues/sediments in the Residue Processing Facility.		

PERMIT NO. DC0000019	
SECTION I - OPERATION AND MAINTENANCE	
TREATMENT FACILITY PROPERLY OPERATED AND MAINTAINED. DETAILS:	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A (Further explanation attached <u>See Notes</u>)
(a) STANDBY POWER OR OTHER EQUIVALENT PROVISIONS PROVIDED.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(b) ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES AVAILABLE.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(c) REPORTS ON ALTERNATE SOURCE OF POWER SENT TO EPA/STATE AS REQUIRED BY PERMIT.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(d) SLUDGES AND SOLIDS ADEQUATELY DISPOSED.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(e) ALL TREATMENT UNITS IN SERVICE.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(f) CONSULTING ENGINEER RETAINED OR AVAILABLE FOR CONSULTATION ON OPERATION AND MAINTENANCE PROBLEMS.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(g) QUALIFIED OPERATING STAFF PROVIDED.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(h) ESTABLISHED PROCEDURES AVAILABLE FOR TRAINING NEW OPERATORS.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(i) FILES MAINTAINED ON SPARE PARTS INVENTORY, MAJOR EQUIPMENT SPECIFICATIONS, AND PARTS AND EQUIPMENT SUPPLIERS.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(j) INSTRUCTIONS FILES KEPT FOR OPERATION AND MAINTENANCE OF EACH ITEM OF MAJOR EQUIPMENT.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(k) OPERATION AND MAINTENANCE MANUAL MAINTAINED.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(l) SPCC PLAN AVAILABLE. (see notes)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(m) REGULATORY AGENCY NOTIFIED OF BY-PASSING. (Dates _____)	<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(n) ANY BY-PASSING SINCE LAST INSPECTION.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(o) ANY HYDRAULIC AND/OR ORGANIC OVERLOADS EXPERIENCED.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
SECTION J - COMPLIANCE SCHEDULES	
PERMITTEE IS MEETING COMPLIANCE SCHEDULE.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A (Further explanation attached)
CHECK APPROPRIATE PHASE(S):	
<input type="checkbox"/> (a) THE PERMITTEE HAS OBTAINED THE NECESSARY APPROVALS FROM THE APPROPRIATE AUTHORITIES TO BEGIN CONSTRUCTION.	
<input type="checkbox"/> (b) PROPER ARRANGEMENT HAS BEEN MADE FOR FINANCING (mortgage commitments, grants, etc.).	
<input type="checkbox"/> (c) CONTRACTS FOR ENGINEERING SERVICES HAVE BEEN EXECUTED.	
<input type="checkbox"/> (d) DESIGN PLANS AND SPECIFICATIONS HAVE BEEN COMPLETED.	
<input type="checkbox"/> (e) CONSTRUCTION HAS COMMENCED.	
<input type="checkbox"/> (f) CONSTRUCTION AND/OR EQUIPMENT ACQUISITION IS ON SCHEDULE.	
<input checked="" type="checkbox"/> (g) CONSTRUCTION HAS BEEN COMPLETED.	
<input checked="" type="checkbox"/> (h) START-UP HAS COMMENCED.	
<input type="checkbox"/> (i) THE PERMITTEE HAS REQUESTED AN EXTENSION OF TIME.	
Comments: 1. The Washington Aqueduct completed construction of the Residue Processing Facility and started treating/drying residues/sediments. The facility no longer discharges sediment laden water to the Potomac River. The facility is in compliance with the permit effluent limits. 2. The Washington Aqueduct revised its BMP and SPCC plans and is implementing them accordingly, including staff training.	

		PERMIT NO. DC0000019
SECTION K - SELF-MONITORING PROGRAM		
PART 1 - FLOW MEASUREMENT (Further explanation attached _____)		
PERMITTEE FLOW MEASUREMENT MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
DETAILS:		
(a) PRIMARY MEASURING DEVICE PROPERLY INSTALLED.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
TYPE OF DEVICE <input type="checkbox"/> WEIR <input checked="" type="checkbox"/> PARSHALL FLUME <input type="checkbox"/> MAGMETER <input type="checkbox"/> VENTURI METER <input type="checkbox"/> OTHER (Specify: Use basin capacity to estimate effluent flow)		
(b) CALIBRATION FREQUENCY ADEQUATE. (Date of last calibration _____)		<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(c) PRIMARY FLOW MEASURING DEVICE PROPERLY OPERATED AND MAINTAINED.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(d) SECONDARY INSTRUMENTS (totalizers, recorders, etc.) PROPERLY OPERATED AND MAINTAINED.		<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(e) FLOW MEASUREMENT EQUIPMENT ADEQUATE TO HANDLE EXPECTED RANGES OF FLOW RATES.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
PART 2 - SAMPLING (Further explanation attached <u>See Notes</u>)		
PERMITTEE SAMPLING MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
DETAILS: <u>See Notes</u> .		
(a) LOCATIONS ADEQUATE FOR REPRESENTATIVE SAMPLES.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(b) PARAMETERS AND SAMPLING FREQUENCY AGREE WITH PERMIT		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(c) PERMITTEE IS USING METHOD OF SAMPLE COLLECTION REQUIRED BY PERMIT. IF NO, <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> MANUAL COMPOSITE <input type="checkbox"/> AUTOMATIC COMPOSITE _____ FREQUENCY		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(d) SAMPLE COLLECTION PROCEDURES ARE ADEQUATE.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(i) SAMPLES REFRIGERATED DURING COMPOSITING		<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(ii) PROPER PRESERVATION TECHNIQUES USED		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(iii) FLOW PROPORTIONED SAMPLES OBTAINED WHERE REQUIRED BY PERMIT		<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(iv) SAMPLE HOLDING TIMES PRIOR TO ANALYSES IN CONFORMANCE WITH 40 CFR 136.3		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(e) MONITORING AND ANALYSES BEING PERFORMED MORE FREQUENTLY THAN REQUIRED BY PERMIT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(f) IF (e) IS YES, RESULTS ARE REPORTED IN PERMITTEE'S SELF-MONITORING REPORT. (see notes)		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
PART 3 - LABORATORY (Further explanation attached <u>See Notes</u>)		
PERMITTEE LABORATORY PROCEDURES MEET THE REQUIREMENTS AND INTENT OF THE PERMIT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
DETAILS:		
(a) EPA APPROVED ANALYTICAL TESTING PROCEDURES USED. (40 CFR 136.3)		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(b) IF ALTERNATE ANALYTICAL PROCEDURES ARE USED, PROPER APPROVAL HAS BEEN OBTAINED.		<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
(c) PARAMETERS OTHER THAN THOSE REQUIRED BY THE PERMIT ARE ANALYZED.		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A
(d) SATISFACTORY CALIBRATION AND MAINTENANCE OF INSTRUMENTS AND EQUIPMENT.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(e) QUALITY CONTROL PROCEDURES USED. (Lab participates in DMR – QA Studies)		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(f) DUPLICATE SAMPLES ARE ANALYZED _____ 5 % OF TIME.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(g) SPIKED SAMPLES ARE USED _____ 10 % OF TIME.		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
(h) COMMERCIAL LABORATORY USED.		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A
(i) COMMERCIAL LABORATORY STATE CERTIFIED.		<input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
LAB NAME _____.		
LAB ADDRESS _____.		
Comments:		
(1) Discharge flow is estimated from the hose pipe flow during the cleaning of the basins and the total capacity of each basin. (2) Due to the continuous discharge of Outfall 002Q, the outfall is sampled monthly, instead of quarterly. (3) Perchlorate is sampled and analyzed on a weekly basis in addition to monthly analysis of all analytes. Only monthly data is reported.		
(4) The lab participates in the U.S. EPA DMR-QA Studies.		

						PERMIT NO. DC0000019	
SECTION L - EFFLUENT/RECEIVING WATER OBSERVATIONS (Further explanation attached _____)							
OUTFALL NO.	OIL SHEEN	GREASE	TURBIDITY	VISIBLE FOAM	VISIBLE FLOAT SOLIDS	COLOR	OTHER
Outfall 002Q*	No	No	No	No	No	clear	None

* Only Outfall 002Q was discharging at the time of inspection. The discharge was clear. .

The inspectors did not visit Outfalls 002, 003, 004, 006, and 007.

(Sections M and N: Complete as appropriate for sampling inspections)

SECTION M - SAMPLING INSPECTION PROCEDURES AND OBSERVATIONS (Further explanation attached **No samples were taken during the inspection.**)

☐ GRAB SAMPLES OBTAINED

☐ COMPOSITE OBTAINED

☐ FLOW PROPORTIONED SAMPLE

☐ AUTOMATIC SAMPLER USED

☐ SAMPLE SPLIT WITH PERMITTEE

☐ CHAIN OF CUSTODY EMPLOYED

☐ SAMPLE OBTAINED FROM FACILITY=S SAMPLING DEVICE

COMPOSITING FREQUENCY _____ PRESERVATION _____

☐ SAMPLE REFRIGERATED DURING COMPOSITING: ☐ YES ☐ NO

SAMPLE REPRESENTATIVE OF VOLUME AND NATURE OF DISCHARGE _____

SECTION N - ANALYTICAL RESULTS (Attach report if necessary) **N/A**

Chains of Custody for weekly and monthly sample collection from outfall 002Q were not signed because the sampler was also the person analyzing the samples. Electronic records were maintained and contained initials of samplers.

Water/NPDES Compliance Inspection,
NPDES Permit No. DC0000019
Department of the Army, Baltimore District,
Corps of Engineers, Washington Aqueduct Division
Washington, DC.

Inspectors: Adion Chinkuyu, Environmental Engineer, District Department of the Environment
David Pilat, Environmental Protection Specialist, District Department of the Environment
Isaac Kelley, Environmental Protection Specialist, District Department of the Environment

Inspection Date: July 31, 2013

1. Introduction

On July 31, 2013, District Department of the Environment (DDOE) Water Quality Division inspectors Adion Chinkuyu, David Pilat, and Isaac Kelley, conducted National Pollutant Discharge Elimination System (NPDES) Compliance Inspection at the Washington Aqueduct Station/facility in Washington, D.C, which is managed by the United States Army Corps of Engineers, Baltimore District. The inspectors reviewed records, interviewed personnel, conducted an inspection tour of the facility, and completed an EPA Form 3560-3 Water Compliance Inspection Report. The primary facility representatives were John Peterson, Superintendent; and Arthur White, Supervisor. The purpose of the inspection was to determine the accuracy and reliability of the facility's self-monitoring and reporting program as stipulated in the NPDES Permit Number DC0000019.

The weather at the time of inspection was partly cloudy with a temperature of about 80°F.

2. Facility Description and Background

The Washington Aqueduct water treatment facility produces drinking water for approximately one million people living, working, or visiting in the District of Columbia, Arlington County and the City of Falls Church in Virginia (**Figure 1**). The facility is a Federally-owned water treatment agency and produces an average of 180 million gallons of water per day (MGD) from its two treatment plants (Dalecarlia and McMillan) located in the District of Columbia. The facility draws all its raw water from the Potomac River at two locations: Great Falls Dam (**Photo 1**) and Little Falls Dam (**Photo 2**) in Maryland (**Figure 1**). At Great Falls Dam intake point, raw water flows under gravity to the Forebay Reservoir. At Little Falls Dam intake point, there are six pumps with a capacity of 525 MGD that pump raw water to the Dalecarlia Reservoir (**Figure 1, Photo 2**). The Little Fall Dam intake point is used only when needed (and there has not been a need to run the pumps).

3. Operation and Maintenance

(a) Water Treatment Plant Process

Under normal operating conditions, raw water is diverted from the Potomac River at (i) Great Falls Dam intake point (**Photo 1**), located in Great Falls, Maryland and flows under gravity to the Forebay Reservoir through two 100-MGD capacity conduits (**Photo 3**) and then pumped into the Dalecarlia Reservoir. During low flow or flooding conditions in the Potomac River, raw water is pumped from the Little Falls Dam (**Photo 2**) to the Dalecarlia Reservoir. At both Dalecarlia and McMillan treatment plants, raw water is subjected to a full conventional water treatment process (shown in **Figure 2**) to remove suspended solids, sediments, bacteria, and microorganisms to produce drinking water.

(i) **Screening:** Raw water is passed through a series of screens designed to remove or filter debris such as twigs, leaves, and other large particles at both the Great Falls Dam intake the Little Falls Dam intake (**Photo 4**), and Dalecarlia Reservoir prior to pre-sedimentation and other treatment processes within the plant.

(ii) **Pre-sedimentation:** This involves settlement of sand and silt to the bottom as raw water moves slowly through the Forebay and Dalecarlia Reservoir. Settled sand and silt are removed by dredging the reservoirs periodically.

(iii) **Coagulation:** This involves adding alum (aluminum sulfate) and polymer coagulants to raw water as it flows to sedimentation basins. In solution, alum releases positively charged ions (cations), which cause the negatively charged particles suspended in the water to lump together into denser “particles” which are then able to settle out.

(iv) **Flocculation:** Is the gentle stirring of water to distribute the coagulant. This causes the particles to combine and grow large and heavy enough to settle. This process takes approximately 25 minutes.

(v) **Sedimentation:** The quiescent flow conditions in the sedimentation basins (**Photo 5**) cause the flocculated particles to settle to the bottom more efficiently. The facility representative stated that after about four hours, approximately 85 percent of the suspended material settles.

(vi) **Filtration:** Supernatant in the sedimentation basins decants into gravity filter media units consisting of layers of granular anthracite coal, sand, and gravel (**Photos 6**). Filtered water passes through to a collection system underneath.

(vi) **Disinfection:** Chlorine in the form of sodium hypochlorite is added with precision equipment to kill pathogens (bacteria, virus, etc.). Ammonia is then added. The chlorine and ammonia combine to form chloramine compounds, which are more stable than chlorine and can be maintained throughout the distribution process. The concentration of chloramines in the water is closely monitored from the time it is added at the treatment plant to points near the furthest reaches of the distribution systems. Fluoride, in the form of hydrofluorosilicic acid, is added to help reduce tooth decay.

Calcium hydroxide (lime) is also added to reduce corrosion in the pipes and other equipment in the distribution systems. Adding small amounts of lime introduces a slight alkalinity and thus a chemical

balance, which helps prevent corrosion in the water distribution system. Lime addition also reduces the leaching of substances from plumbing.

Powdered activated carbon is occasionally used for taste and odor control.

All the chemicals used at the facility (e.g., sodium hypochlorite and caustic soda) are stored at the site in well protected buildings in containers with secondary containments (**Photo 6**).

After the water has gone through the entire treatment process, it is referred to as finished or potable water.

(b) Treatment Plants

(i) McMillan Water Treatment Plant

McMillan Water Treatment Plant has a total capacity of 120 MGD. Raw water from Dalecarlia Reservoir is pumped to the three Georgetown Reservoir sedimentation basins via the Georgetown Conduit. Carbon, fluoride, aluminum sulfate, and pre-chlorine are added in the Georgetown Conduit. According to the facility representatives, the residence time in the Georgetown sedimentation basins is between 1.25 and 3 days. From the Georgetown sedimentation basins, raw water is pumped to the McMillan Reservoir through the McMillan Raw Water Pump Station. Sodium hypochlorite and filter aid polymers are added upstream of the twelve McMillan rapid sand filters. The resulting filter backwash is returned to McMillan Reservoir. Sodium hypochlorite, lime, and sulfur dioxide are added to the filtered water prior to storage in the clear water basins.

(ii) Dalecarlia Water Treatment Plant

Dalecarlia Water Treatment Plant (**Figure 2**) has a total treatment capacity of 240 MGD, but has only been producing 120 MGD. Raw water is pumped from Dalecarlia Reservoir through four flow measuring hydraulic flumes (**Photo 7**), and then onto the Dalecarlia sedimentation basins (**Photo 5**). Carbon, pre-chlorine, sodium permanganate, aluminum sulfate, and polymer are added upstream at different stages of the sedimentation process. According to the facility representative, the four sedimentation basins have a hydraulic retention time of 4 to 5 hours. Sedimentation is followed by the addition of filter-aid polymer and sodium hypochlorite prior to rapid sand filtration. There are a total of 36 active rapid sand filters (**Photo 8(a)**), with an additional 12 filters which are inactive (**Photo 8(b)**). A model of the filters, showing the structure and orientation of the filter media, is presented as (**Photo 8(c)**). Filters are periodically backwashed and the backwash water is returned to the Forebay Reservoir, and then onto Dalecarlia Reservoir. Ultimately fluoride, post hypochlorite, and lime are added prior to storage in the clear water basins.

The inspectors conducted a visual evaluation of the Dalecarlia Treatment Plant to assess compliance with the NPDES permit. The inspectors also visually evaluated the water reservoirs at the intake, water treatment process, residue processing facility, outfall (Outfall 002Q), laboratory, and reviewed records, and reports. No inspection was conducted at the McMillan Water Treatment Plant.

(c) Sludge Handling and Disposal

The facility representatives indicated that during previous sedimentation basins cleaning events, all sediments and sludge used to be washed down the pipe to the outfalls at the Potomac River. This practice made the Aqueduct exceed DC0000019 permit limitations for total suspended solids, copper, and aluminum. To solve the problem, the Aqueduct entered into a Federal Facility Compliance Agreement (FFCA) to construct a residues processing facility (RPF). As noted elsewhere in this report, the RPF is now fully operational.

The facility representatives indicated that the Aqueduct does not need to drain the water when cleaning the sedimentation basins because at the bottom of each basin, there are scrapers that collect all sediments and pump them to the RPF building.

The RPF collects and treats (through a combination of solids concentration and drying processes) all sediments/residues from the sedimentation basins, reservoir dredging, and filter backwash. The facility representative stated that the sediment treatment process involves scrapping the sediments from the bottom of sedimentation tanks, or dredging from the reservoirs, followed by pumping them into the Thickener Influent Splitter Chamber (TISC) (also known as influent residuals blending tank (**Figure 3 and Photo 9**). At this point, the percent solid is less than 0.5%, then transferring the contents of the TISC into four Gravity Thickeners (GTs) (**Photo 10(a) and 10(b)**) where the percentage solid is increased (1.19% at the time of inspection) (**Photo 10(c)**). The residuals from the GTs are subsequently pumped to Centrifuges (**Photo 11**) where all remaining water is removed and the dried sediment (cake) is dropped into storage silos (**Photo 12**) with the spent water that was removed returned to the splitter box (**Photo 13 & Figure 3**). After drying, the residuals (cake) are sent to storage bins - ready to be weighed and trucked offsite. The treated residual is about 25 percent solids and is currently being trucked to a landfill for disposal. The Aqueduct pays contractors to transport and dispose of the residuals. The inspectors observed that the facility is handling and disposing of the residues properly.

The entire process is centrally managed via the SCADA system located in the RPF control room.

4. Permit Verification

Discharges from the water treatment facility are regulated by NPDES Permit No. DC0000019 (Permit). The Permit was issued to Washington Aqueduct on November 20, 2008, and authorizes the discharge of wastewater and sediments through six NPDES outfalls. The active outfalls (002, 003, and 004) discharge to the Potomac River when the sedimentation basins are being cleaned. The facility representatives explained that the cleaning process involved opening basin drain valves and flushing out the sediment with chlorinated water. Chlorinated wash water was subsequently dechlorinated with sodium bisulfate prior to discharge. Lastly, the discharge pipe was flushed for two hours with raw water. The facility representatives indicated that the draining, washing, and flushing process used to take about 6 to 8 hours. The last basin cleaning and discharge using the process described above occurred in January 2012. Since January 2012, the facility has not discharged any wastewater and sediments because all the sediments or residuals are being processed (treated by drying) at the

Residuals Processing Facility (RPF), which was constructed under the Federal Facility Compliance Agreement (FFCA) (**Figure 3**).

The permit was available for review at the facility and was satisfactory. The facility representatives indicated that since the RPF begun operating, there will be no discharge from the basins, apart from basin leakage and groundwater seepage through Outfall 002Q (**Photo 14**).

5. Compliance Schedule

Residuals Processing Facility (RPF)

The Aqueduct entered into FFCA with USEPA Region III. The FFCA was put into place to ensure that the Aqueduct takes any and all necessary steps within its power to achieve compliance with the numeric discharge limitations (especially for suspended solids and metals) as set forth in the NPDES permit. To meet the requirements of the FFCA and comply with the NPDES permit limitations the facility constructed an RPF (**Figure 3**). The RPF collects and treats (by drying) all sediments/residues from the sedimentation basins, reservoir dredging, and filter backwash. The facility representative stated that the sediment treatment process involves scrapping the sediments from the bottom of sedimentation tanks, or dredging from the reservoirs, followed by pumping them into the Thickener Influent Splitter Chamber (TISC) (also known as influent residuals blending tank (**Figure 3 and Photo 9**). At this point, the percent solid is less than 0.5%, then transferring the contents of the TISC into four Gravity Thickeners (GTs) (**Photo 10(a) and 10(b)**) where the percentage solid is increased (1.19% at the time of inspection) (**Photo 10(c)**). The residuals from the GTs are subsequently pumped to the Centrifuges (**Photo 11**) where all remaining water is removed and the dried sediment (cake) is dropped into storage silos (**Photo 12**) with the spent water that was removed returned to the splitter box (**Photo 13 & Figure 3**). The entire process is centrally managed via the SCADA system located in the RPF control room.

The treated residues are loaded into trucks and taken offsite by a contractor for land filling and sometimes for composting.

6. Self-Monitoring Program

The facility is conducting its self monitoring program in accordance with Permit Part II, Section C.3, which requires that monitoring be conducted consistent with procedures approved under 40 CFR 136. Raw and processed waters are monitored at different stages of the treatment process. Samples are collected, stored and processed according to the permit requirements.

(a) Flow Measurement

Currently, the facility does not measure the effluent it discharges as indicated in the permit. Instead, discharges are estimated from the basin capacities and the amount of water used during the cleaning process. The facility representatives stated that since the facility started treating residuals/sediments, they do not measure discharge flow because they do not discharge.

(b) Sampling

The facility representatives indicated that the sampling locations are adequate and representative of the type of the discharge. Currently, only one outfall (Outfall 002Q) is discharging and is being sampled. The facility representatives indicated that Outfall 002Q discharges into the Potomac River through Outfall 002 channel. According to the plant representative, Outfall 002Q is the only outfall to be monitored. Sampling at Outfall 002Q is being performed monthly (with weekly internal analysis of perchlorate) instead of quarterly as indicated in the permit. The additional data collected is reported on the monthly discharge reports (DMRs).

(c) Laboratory

The facility's in-house laboratory is used to monitor effluent samples for all permit parameters according to the schedules set forth in NPDES Permit DC0000019. The laboratory equipment (**Photo 15**), calibration records, bench/log books, and lab reports (**Photos 16**) appeared to be complete and in order. Chemicals and buffer solutions used in the lab were up to date (**Photos 17**). The lab also participates in the EPA DMR-QA Studies.

7. Effluent/Receiving Waters and Outfalls

(a) Outfall 002

Outfall 002 discharges to the Potomac River when cleaning the four Dalecarlia sedimentation basins. There was no discharge at the time of inspection. The facility representative stated that the last cleaning and discharge from the sedimentation basins occurred in January 2012. Since the completion of the RPF, there has never been any discharge through Outfall 002.

(b) Outfall 002Q

Outfall 002Q discharges seepage from the Dalecarlia sedimentation basins and discharge from a spring located beneath the sedimentation basins. NPDES Permit Number DC0000019 identifies this discharge as the "Other Dalecarlia Discharge", which continuously discharges (**Photo 14**). The facility representatives indicated that Outfall 002Q discharges into the Potomac River through Outfall 002 channel.

(c) Outfalls 003 and 004

Both Outfalls 003 and 004 discharge effluent and solids from the Georgetown sedimentation basins to the Potomac River. When Sedimentation Basin No. 1 is being cleaned out, it discharges through Outfall 004. When Sedimentation Basin No. 2 is being cleaned out, it discharges to both Outfalls 003 and 004.

The facility representatives indicated that there was no discharge from either Outfall 003 or Outfall 004 at the time of inspection because all the sediments are pumped to the RPF. These outfalls were not inspected during the inspection.

(d) Outfall 006

Outfall 006 discharges treated water blow-off from City Tunnel to Rock Creek. The outfall has not discharged for more than six years. The outfall was not inspected during this inspection.

(e) Outfall 007

Outfall 007 discharges treated water blow-off from the Georgetown Conduit to the Potomac River. The outfall has not discharged for more than six years and was not inspected during this inspection.

Notes:

- (1) Although there are four active outfalls: 002Q, 002, 003, and 004, the inspectors only inspected Outfall 002Q. Outfalls 002, 003, 004, 006, and 007 were not inspected because the facility stopped using them.
- (2) Since February 2012, the facility staff collects samples from Outfalls 002Q only. This is because the facility has stopped draining and/or discharging sediments from the sedimentation basins through the other outfalls.

8. Records and Reports

(a) Discharge Monitoring Reports

Discharge Monitoring Reports (DMRs) and laboratory reports for the period of June 2012 to June 2013 were reviewed as a component of this inspection. The review included a comparison of reported monitoring results versus requirements and limitations contained in the permit.

The Aqueduct's DMRs did not indicate any exceedences of DC0000019 permit limits for any analyte from June 2012 through June 2013 for Outfall 002Q. The water discharged through this outfall is mainly groundwater seepage and basin leakage.

The facility stopped discharging to the Potomac River through other outfalls (other than Outfall 002Q) when it started operating the RPF in January 2012 (**Figure 4**).

Review of the discharge monitoring data from Outfall 002Q between June 2012 and June 2013 found that the facility was in compliance with Permit limits. At the time of inspection, discharge from Outfall 002Q was relatively clear and had no evident foaming (**Photo 14**).

(b) Best Management Plan

The facility uses large quantities of different chemicals to treat the water. Such chemicals include lime, methanol, ferric, ferrous, polymer, caustic soda, sodium hypochlorite, and bisulfate. The inspectors observed that the chemicals are properly kept inside buildings in primary storage containers with secondary containment to prevent spills and release. One of the storage buildings is the sodium hypochlorite building (**Photo 6**).

Part II, Section E of the NPDES permit (Best Management Practices) requires the permittee to have a Best Management Practices (BMP) plan. In addition to the BMP plan, the Aqueduct has a Spill

Prevention, Control and Countermeasure Plan (SPCC). The SPCC Plan addresses: (a) operating procedures the facility implements to prevent oil spills; (b) control measures installed to prevent oil from entering navigable waters (i.e. secondary containment); (c) countermeasures to contain, clean up and mitigate the effects of oil spills. The inspectors reviewed both the BMP and SPCC plans as part of this inspection. The most recent plans were dated October 2010. The plans contain the requirements and BMPs as specified in the permit and were found to be satisfactory.

Inspectors observed that the facility is properly operated and maintained consistent with its current NPDES permit.

9. Status of the 2012 Inspection Findings

During the 2012 inspection cycle, the inspectors found that the facility had stopped discharging sediments to the river because all sediments are now being processed at the RPF building. During the 2013 inspection cycle, there was no exceedance for either total suspended solids, or other permitted constituents as only Outfall 002Q was discharging. The dried/processed residues are taken offsite for composting and final disposal. The inspectors observed that nothing has changed since the 2012 inspection. The Aqueduct also revised its BMP and SPCC plans and is implementing them accordingly.

10. Attachments:

- (a) EPA Form 3560-3.
- (b) This Narrative.
- (c) Photo Log.

Water/NPDES Compliance Inspection

NPDES No. DC0000019

Department of the Army, Baltimore District, Corps of Engineers
Washington Aqueduct Water Treatment Plant
Washington, DC.

Inspectors: Adion Chinkuyu, DDOE

David Pilat, DDOE

Isaac Kelley, DDOE

Inspection Date: July 31, 2013

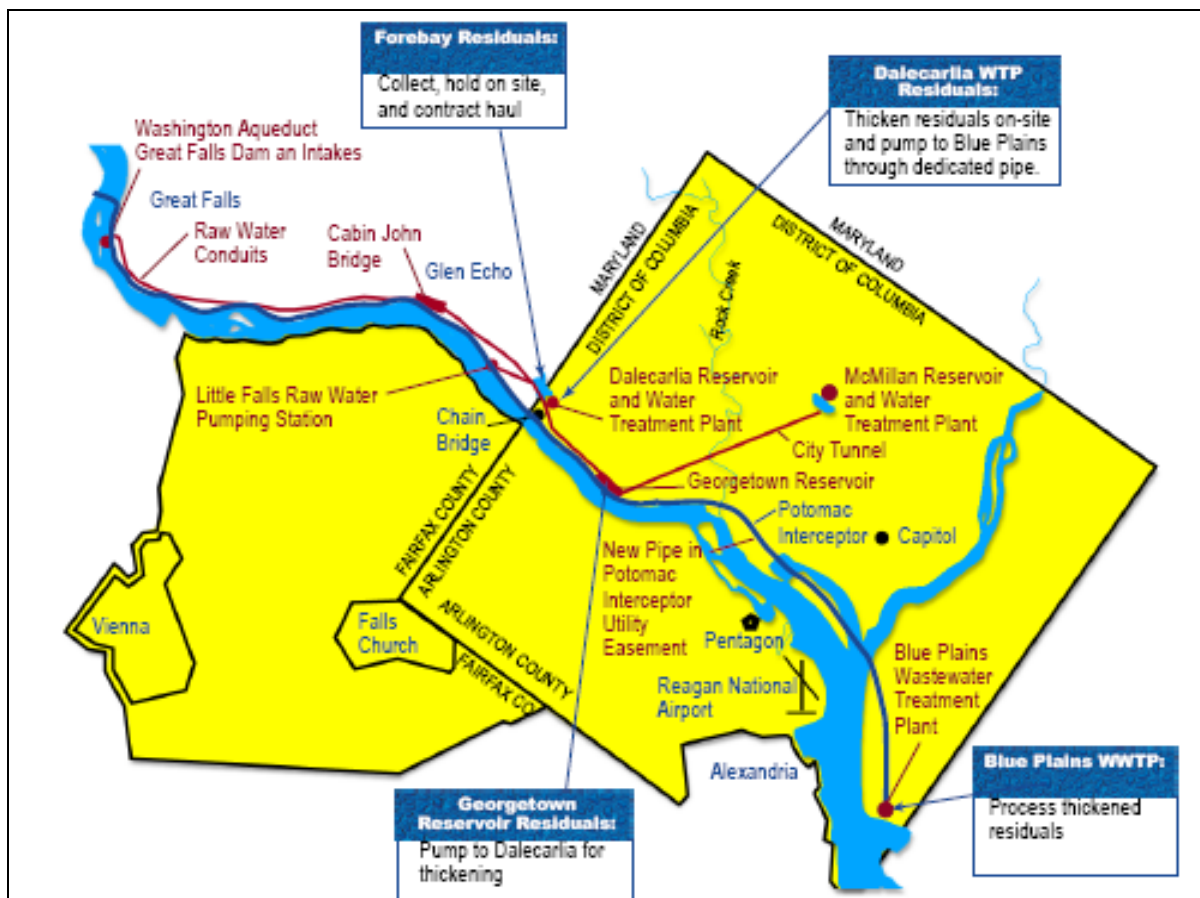


Figure 1: An overview of the service area of the Washington Aqueduct Facility.

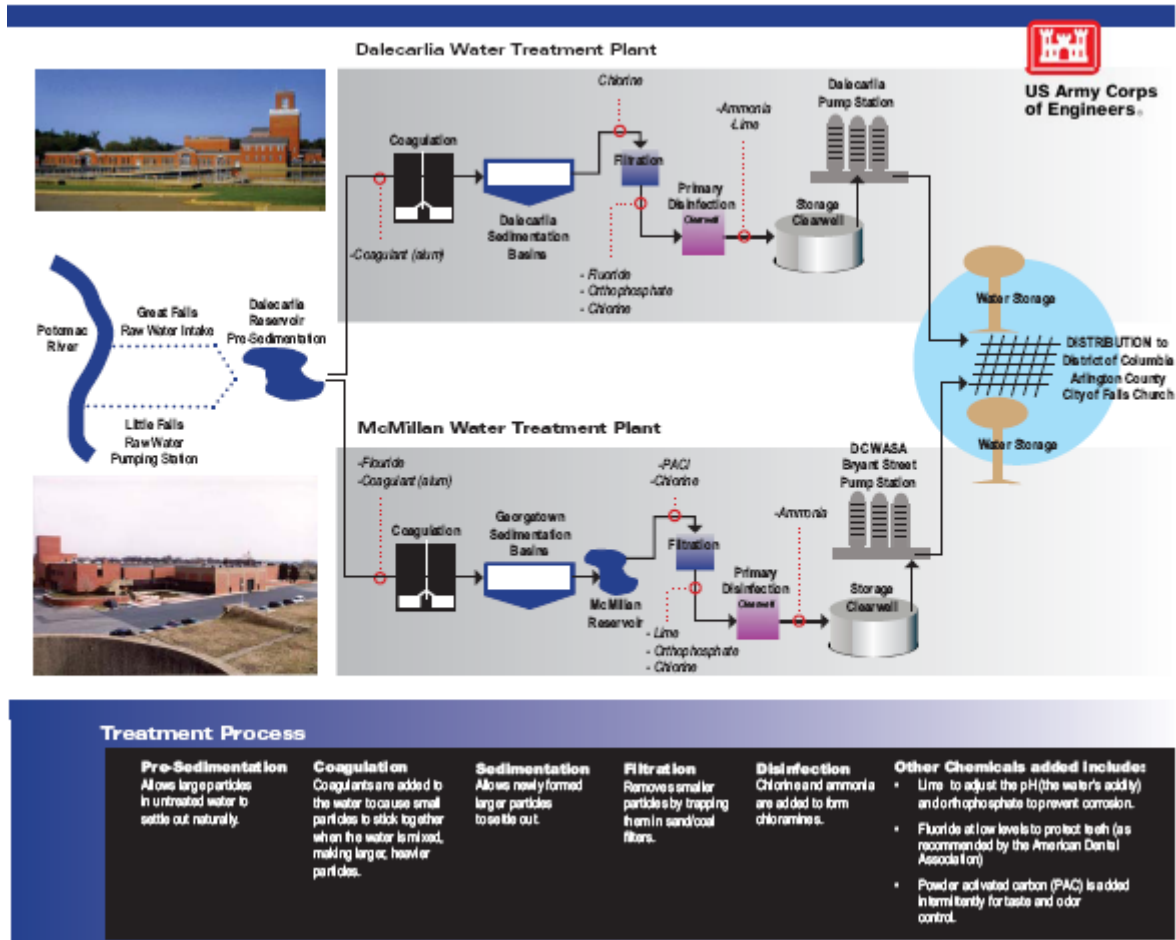


Figure 2: Washington Aqueduct water treatment process.

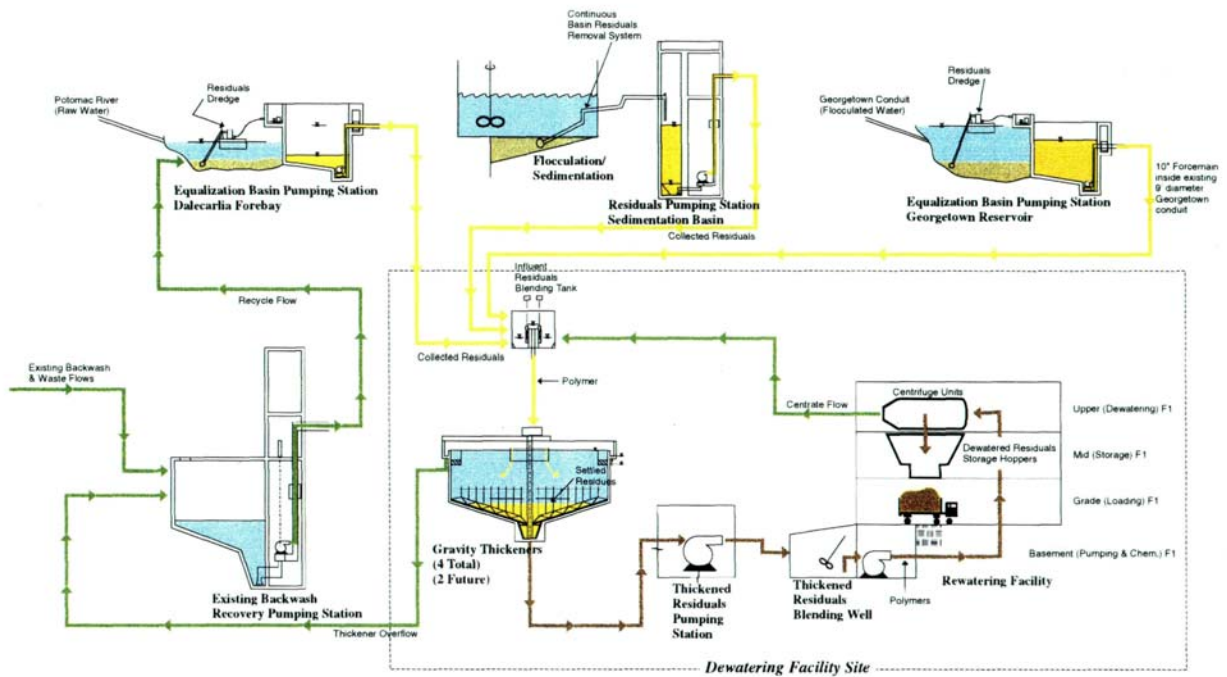


Figure 3: Washington Aqueduct residual management/treatment system.

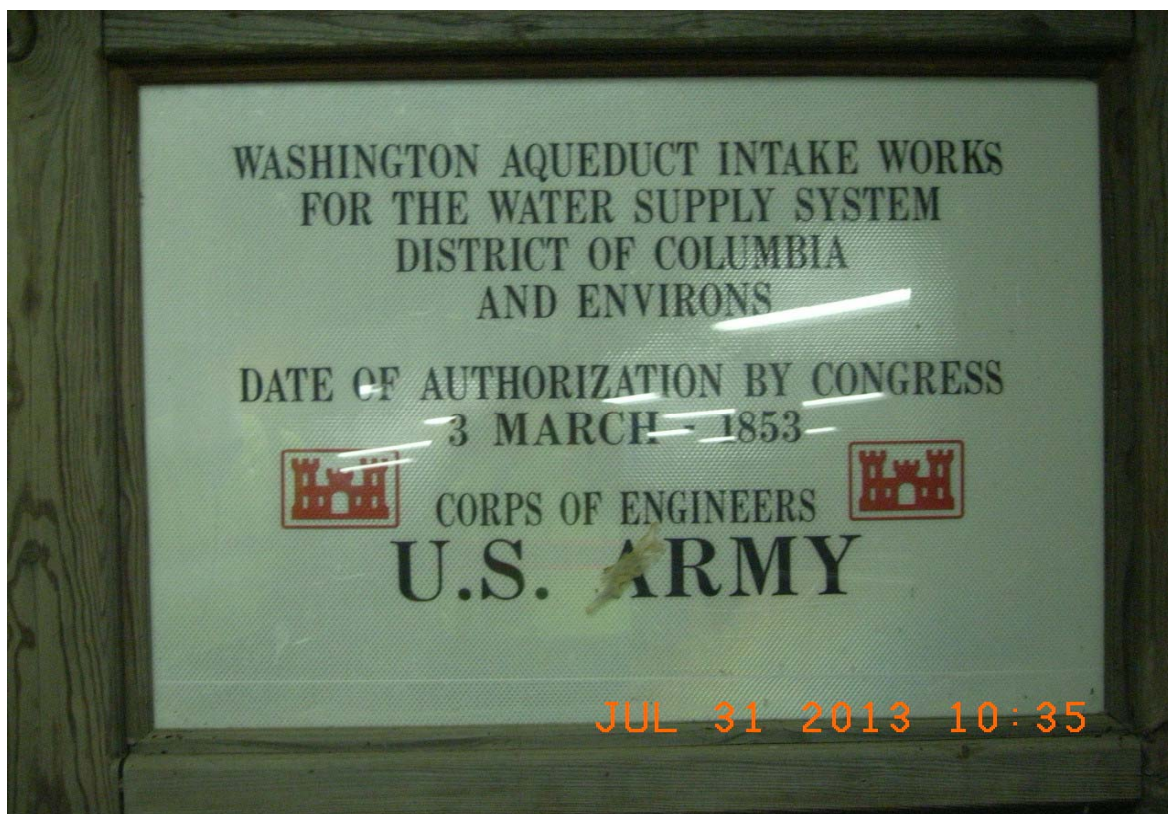


Photo 1(a): Signage at the water intake point at Great Falls Dam.



Photo 1(b): Water intake point (right) for Washington Aqueduct at Great Falls Dam (left).



Photo 2(a): Little Falls Dam pumping station for Washington Aqueduct.



Photo 2(b): Little Falls Dam and location of water intake for Washington Aqueduct.

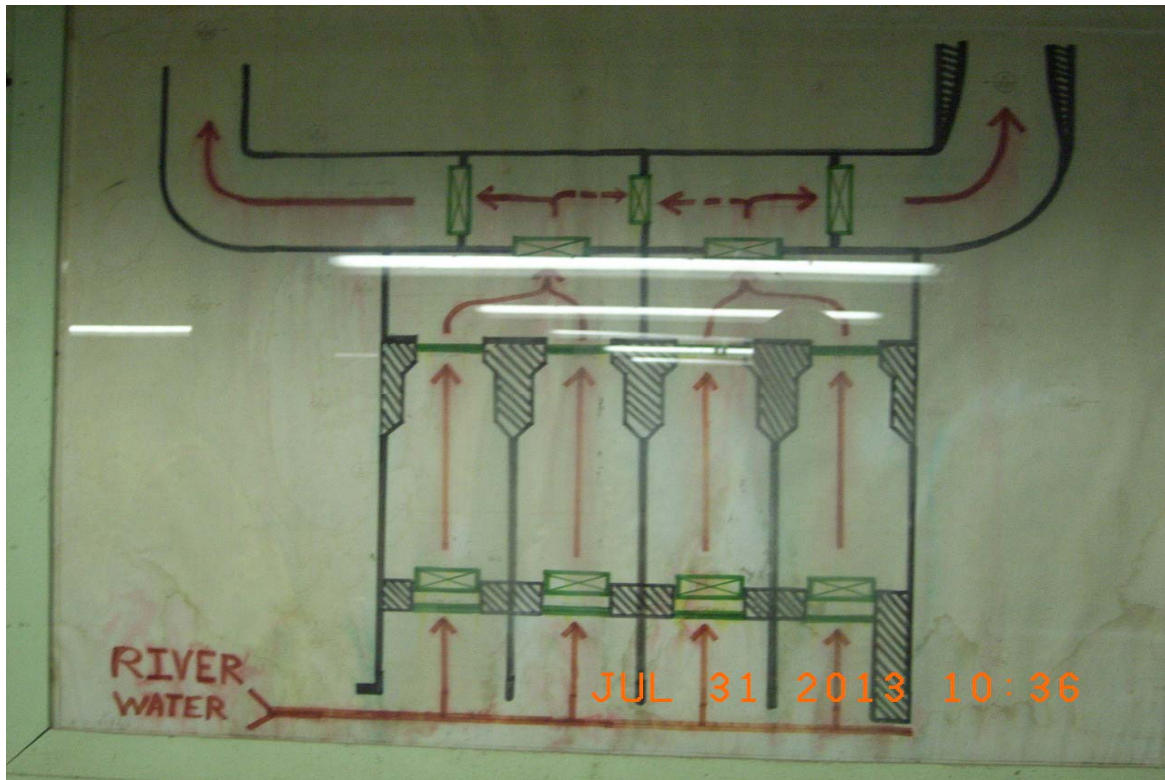


Photo 3(a): Schematic drawing of the intake conduits at Great Falls Dam.



Photo 3(b): Intake conduits at Great Falls Dam intake point.



Photo 4(a): Screens at the intake at Great Falls Dam intake point.

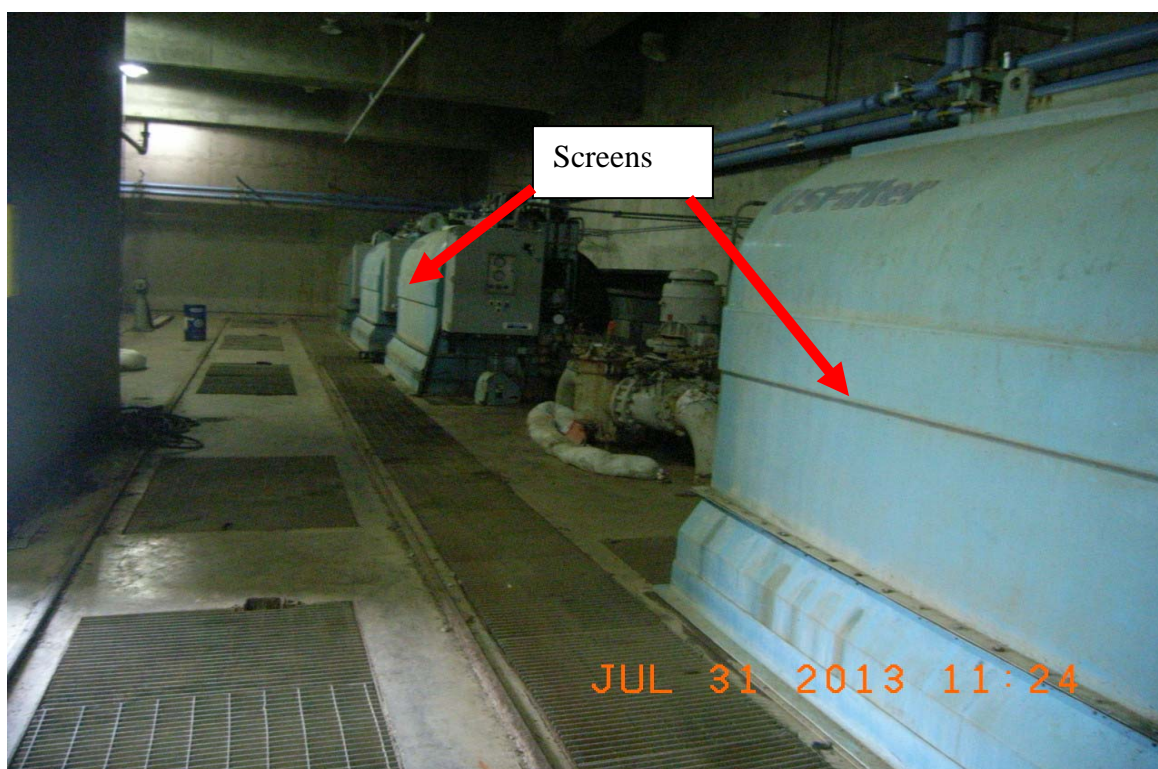


Photo 4(b): Screens at Little Falls Dam intake point.



Photo 5(a): Sedimentation basins at Dalecarlia. Two basins on the left are smaller than the two basins on the right. The basins on the right are double decker (two stories) while the ones on the right are one story.



Photo 5(b): Close up view of the two storied sedimentation basins at Dalecarlia. Raw water enters the basin on the lower basin and exits the basin from the top basin.



Photo 6(a): Sodium hypochlorite storage building. Sodium hypochlorite is one of the chemicals used at the plant.



Photo 6(b): Loading area for sodium hypochlorite.



Photo 7(a): Hydraulic flow measuring flumes for raw water as it enters into the sedimentation basins.

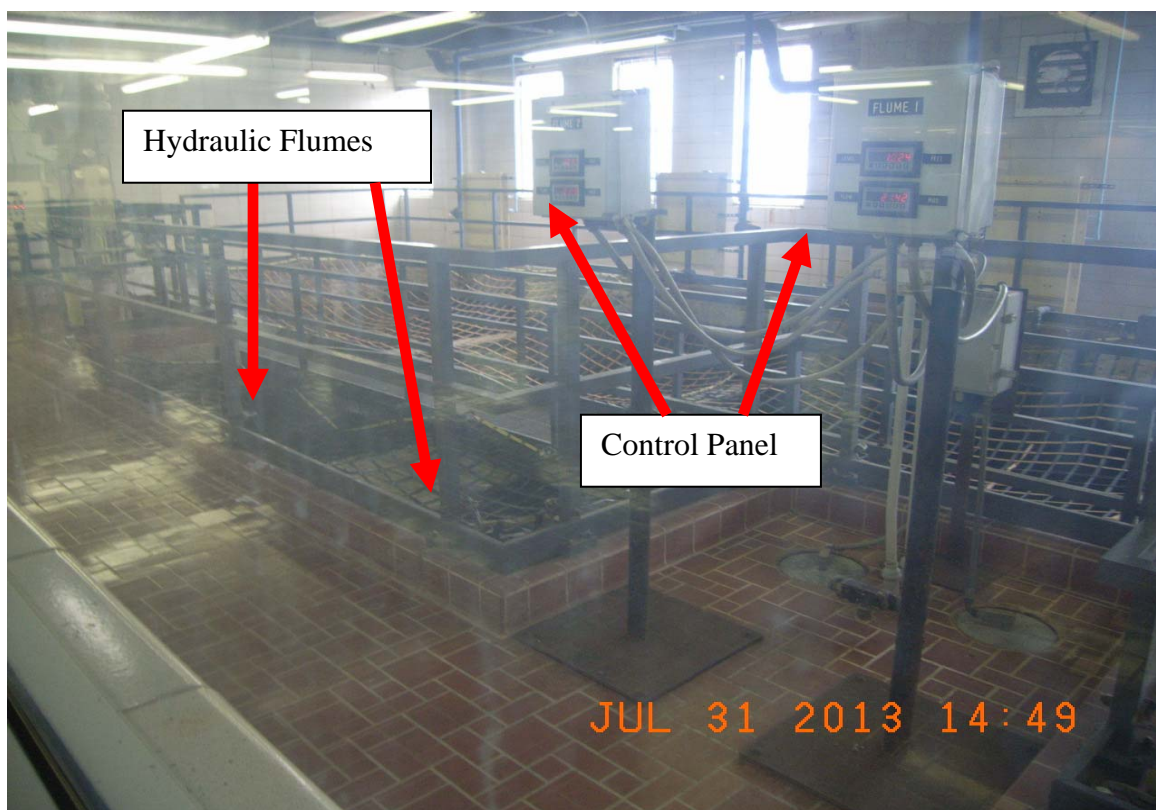


Photo 7(b): Control panels for the hydraulic flow measuring flumes.



Photo 8(a): Rapid gravity sand filters.



Photo 8(b): Standby rapid gravity sand filters. These filters have never been used.



Photo 8(c): Rapid gravity sand filter model.



Photo 9(a): Influent residuals blending tank (influent splitter chamber/box).



Photo 9(b): Influent residuals blending tank (influent splitter chamber/box) – notice the pipes going to different gravity thickeners.



Photo 10(a): Gravity thickener. The facility has four thickeners.



Photo 10(b): Gravity thickener – Clear water falls off the weir and is returned to Forebay/Dalecarlia Reservoirs via the backwash recovery pumping station.



Photo 10(c): A monitoring panel showing the concentration of solids in one of the gravity thickeners.



Photo 11(a): Centrifuges for dewatering the residuals.



Photo 11(b): A screen shot of a centrifuge in the SCADA room.



Photo 12: Dried cake in storage silo.



Photo 13: Concentrate flow (water extracted from the residuals in the centrifuges) is returned to the influent residuals blending tank.



Photo 14(a): Sampling location for Outfall 002Q.



Photo 14(b): Discharge at Outfall 002Q.



Photo 15(a): Laboratory equipment - Mass Spectrometer.



Photo 15(b): Laboratory equipment – drying ovens.

Washington Aqueduct Laboratory
Daily pH Meter Calibration Log (Station # 1)

Date	Analyst	Initial Calibration			Slope (mV) -55 to -61	Verification @ pH 7.0		Electrode ID	pH Meter ID
		pH 4.0 Buffer	pH 7.0 Buffer	pH 10.0 Buffer		AM Check 6.9 to 7.1	PM Check 6.9 to 7.1		
5-30-13	L. Gallimore	4.01	7.01	10.05	-57.0	7.02	7.04	10335105	10335105
6-4-13	B.S.	4.00	7.01	10.05	-57.9	7.00	7.00	10335105	10335105
6-6-13	B.S.	4.00	7.01	10.05	-57.6	6.99	6.97	10335105	420056
6-11-13	"	4.00	7.01	10.05	-57.9	6.97	7.00	"	"
6-12-13	"	4.00	7.01	10.05	-57.7	6.99	6.97	"	"
6-13-13	"	4.00	7.01	10.05	-57.4	6.98	6.99	"	"
6-18-13	"	4.00	7.01	10.05	-57.5	6.99	6.98	"	"
6-19-13	"	4.00	7.01	10.05	-57.2	6.98	7.03	"	"
6-25-13	"	4.00	7.01	10.05	-58.3	7.00	6.98	"	"
6-26-13	"	4.00	7.01	10.05	-57.5	7.01	6.98	"	"
6-28-13	"	4.00	7.01	10.05	-59.0	7.04	7.05	10335105	10335105
7-2-13	L. Gallimore	4.01	7.01	10.05	-58.7	7.04	7.07	10335105	10335105
7-9-13	L. Gallimore	4.00	7.01	10.05	-60.2	7.07	7.04	10335105	10335105
7-19-13	L. Gallimore	4.00	7.01	10.05	-57.8	7.07	7.07	10335105	10335105

Photo 16(a): Calibration sheet for pH meter.

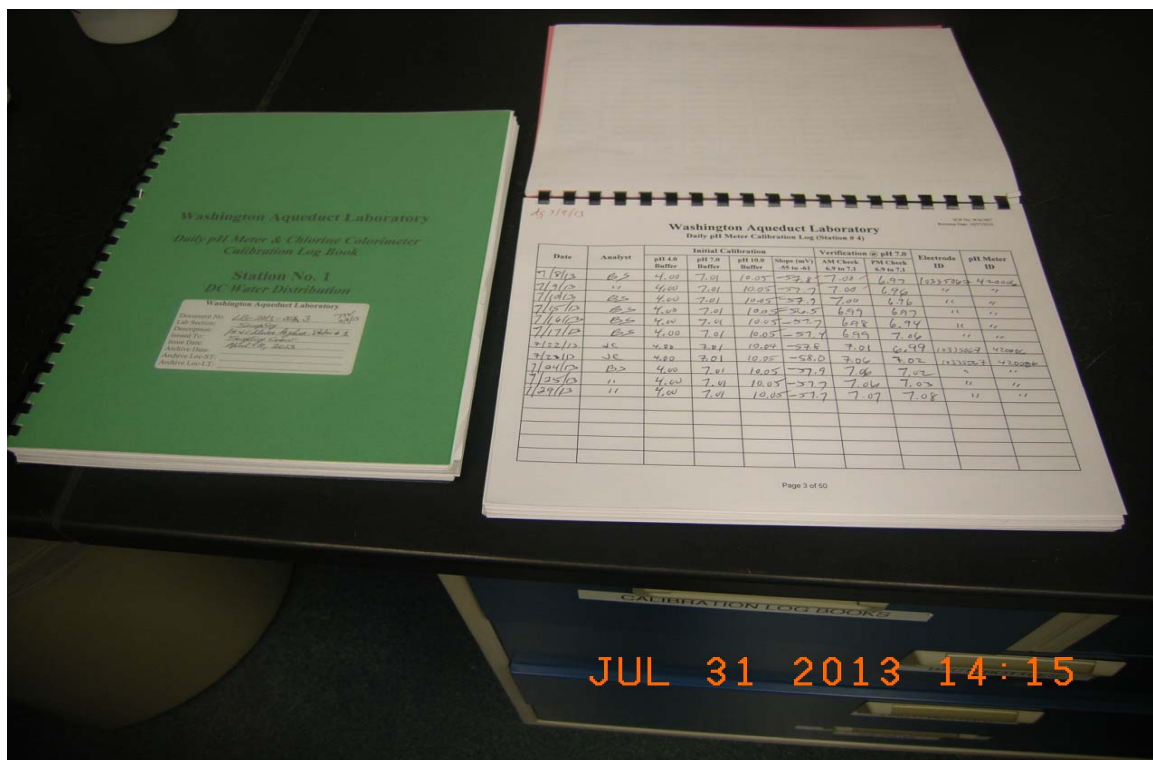


Photo 16(b): Calibration books for laboratory equipment.



Photo 16(d): Laboratory sheet for Total Suspended Solids data.



Photo 17(a): Laboratory chemicals are properly labeled and are current.



Photo 17(b): Laboratory chemicals – pH buffers.